

F. H. BRAECKEL & F. J. EHLERDING.
CONCENTRATING TABLE.

APPLICATION FILED SEPT. 26, 1911.

1,047,161.

Patented Dec. 17, 1912.

2 SHEETS-SHEET 1.

Fig. 1.

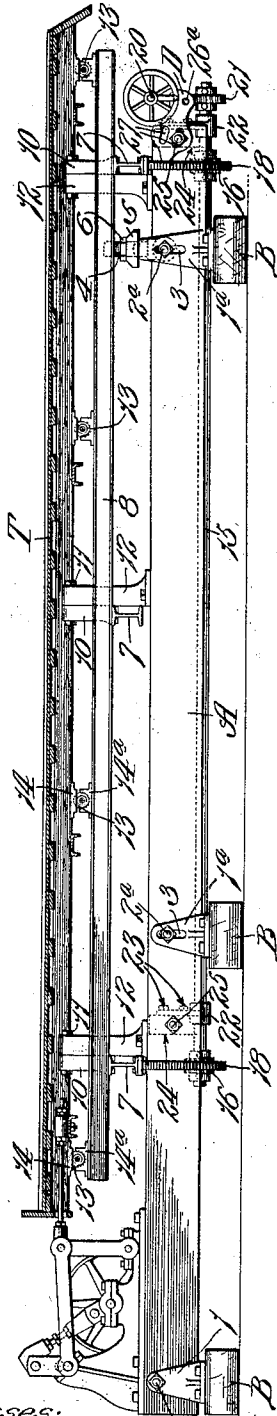
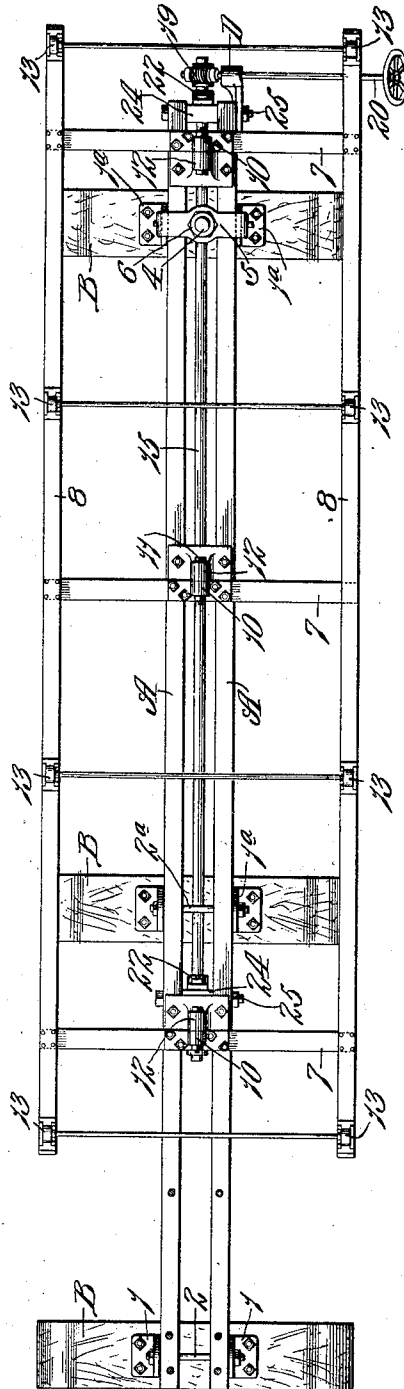


Fig. 2.



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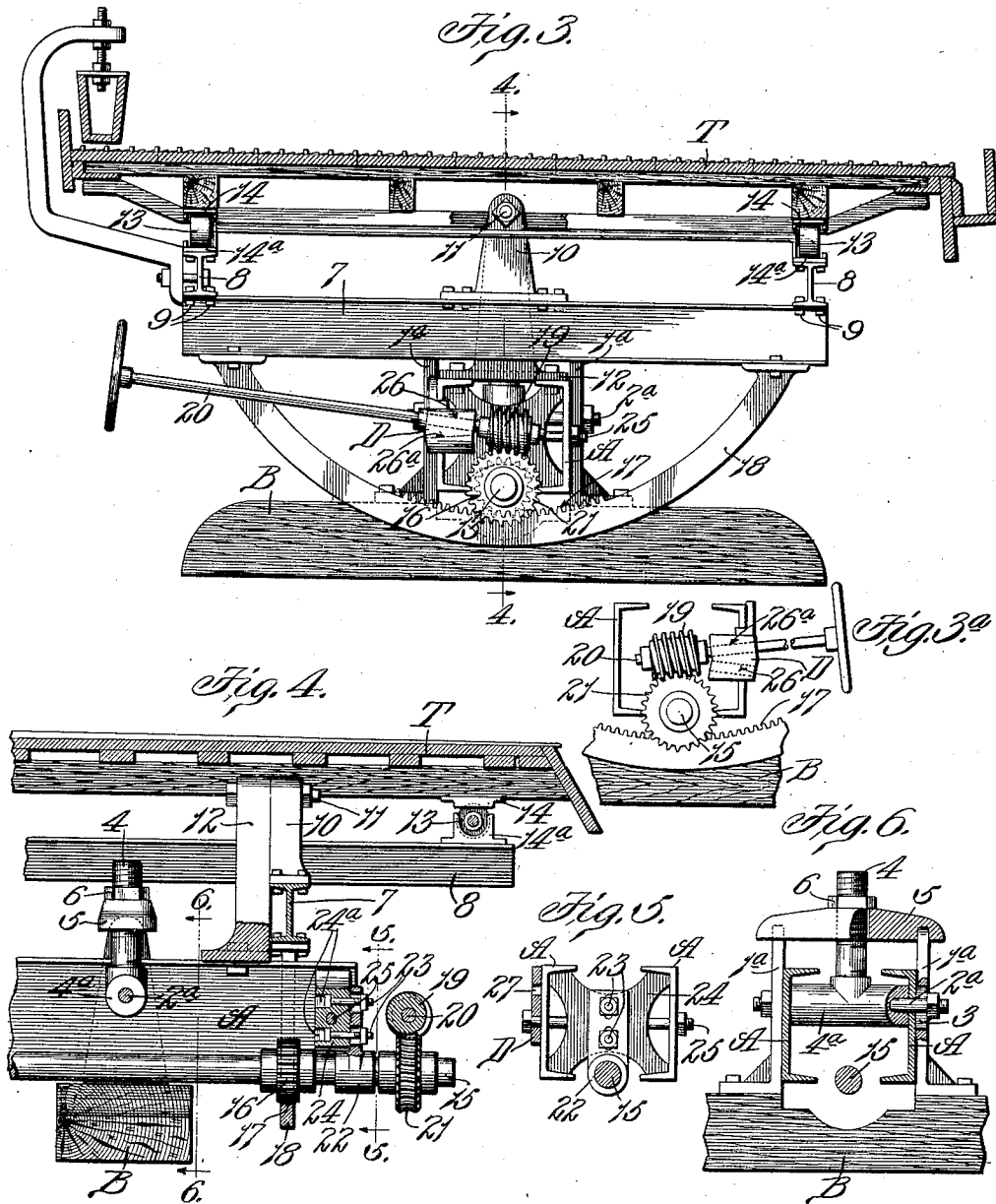
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UNITED STATES PATENT OFFICE.

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CONCENTRATING-TABLE.

1,047,161.

Specification of Letters Patent.

Patented Dec. 17, 1912.

Application filed September 26, 1911. Serial No. 651,444.

To all whom it may concern:

Be it known that we, FRANK H. BRAECKEL and FREDERICK J. EHLERDING, both citizens of the United States, residing at Joplin, Missouri, have invented a certain new and useful Improvement in Concentrating-Tables, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to concentrating tables, and particularly to the means used in such structures for supporting and adjusting the top or deck of the table.

One object of our invention is to provide a concentrating table in which the means that supports the movable top or deck of the table is so designed that it can be adjusted easily and accurately to vary the transverse and longitudinal inclination of the top of the table.

Another object is to provide a concentrating table in which the supporting means for the movable top is so designed that the top will be rigidly supported throughout its entire length and width and thus not be liable to spring when a heavy load is imposed upon same.

Another object is to provide a tilting mechanism for changing the transverse inclination of the top of the table which is so designed that it is not necessary to employ a locking device for holding it in adjusted position.

Another object is to provide a supporting and adjusting mechanism for concentrating tables which can be used with either a right or a lefthand table top. And still another object is to provide a supporting and adjusting mechanism for the purpose described which consists of a vertically adjustable longitudinal member that supports a swinging frame on which the table rests and which is provided with trusses that cooperate directly with the means which tilts the table-supporting frame so as to change the transverse inclination of same.

Other objects and desirable features of our invention will be hereinafter pointed out.

Figure 1 of the drawings is a side eleva-

tional view of a concentrating table constructed in accordance with our invention; Fig. 2 is a top plan view of same; Fig. 3 is an enlarged transverse sectional view of the table; Fig. 3^a is a detail view showing the adjusting mechanism reversed from the position shown in Fig. 3; Fig. 4 is a detail longitudinal sectional view taken on approximately the line 4—4 of Fig. 3; and Figs. 5 and 6 are detail transverse sectional views taken approximately on the lines 5—5 and 6—6 of Fig. 4.

Referring to the drawings which illustrate the preferred form of our invention, A designates a pair of longitudinal sills which are preferably formed from commercially rolled channel irons, and B designates transverse base sills or blocks that are arranged under the longitudinal sills. The longitudinal sills A are pivotally connected at one end to brackets 1 on the transverse base sill B which is located adjacent the mechanism which imparts longitudinal movement to the top or deck of the table, by means of a bolt 2 or other suitable device which extends transversely through the brackets 1 and through the vertical webs of the longitudinal sills A. The intermediate transverse sill and also the transverse sill B at the concentrates discharge end of the table are provided with upwardly projecting brackets 1^a which embrace the longitudinal sills A, and suitable means is provided for clamping the longitudinal sills A to said brackets 1^a such, for example, as transversely extending bolts 2^a on the longitudinal sills that pass through vertically disposed slots 3 in the brackets 1^a. Means is provided for raising and lowering the free end of the longitudinal sills A so as to change the longitudinal inclination of the top or deck T of the table, and in the preferred form of our invention as herein shown, said means consists of a bolt 4 carried by the longitudinal sills A and projecting upwardly through a bearing block 5 which rests upon the upper ends of the brackets 1^a on the transverse base sill B at the concentrates discharge end of the table, as shown in Figs. 1, 2, 4 and 6, and a nut 6 arranged on the bolt 4 above the bearing block 5. The bolt 4 is preferably pivotally connected

to the longitudinal sills A so that it will not be thrown out of a true vertical position when the free end of the longitudinal sills A is raised or lowered, and the bearing block 5 is preferably so constructed that it can rock on the brackets 1^a which support it so as to eliminate the possibility of the bolt 4 becoming bent or twisted when the longitudinal sills A are adjusted. In the form of our invention herein shown the bolt 4 is provided at its lower end with a transversely extending sleeve 4^a that is freely mounted upon the transverse bolt 2^a which passes through the longitudinal sills and through the brackets 1^a on which the bearing block 5 rests, and the upper ends of said brackets are convexed or rounded off, as shown in broken lines in Figs. 1 and 2, so that they will fit in concave seats on the under side of the bearing block 5, as shown in Figs. 4 and 6. When the nut 6 is turned in one direction the free end of the longitudinal sills A will be raised and when said nut is turned in the opposite direction said sills will be lowered, this, of course, being due to the fact that the bearing block 5 rests upon immovable brackets, and the bolt 4 is pivotally connected to the longitudinal sills A in such a manner that it cannot move vertically relatively to said sills. After the sills A have been adjusted in the proper position to impart the desired longitudinal inclination to the top or deck T of the table the nuts on the bolts 2^a are tightened so as to clamp the brackets 1^a tightly against the outer faces of the longitudinal sills A and thus securely lock said sills in adjusted position.

An intermediate frame which we will hereinafter refer to as a "swinging frame", is pivotally mounted on uprights on the longitudinal sills A, and means is provided for tilting or swinging said intermediate frame so as to change the transverse inclination of the top T of the table. We prefer to form the intermediate frame from a plurality of transverse members 7 and longitudinal members 8 connected together in such a manner that a strong rigid structure is produced. The members 7 and 8 are preferably formed from commercially rolled I-beams, and the members 8 are arranged above the members 7 and are connected thereto by bolts or other suitable fastening devices 9 which pass through the top flanges of the transverse members 7 and the bottom flanges of the longitudinal members 8, as shown in Fig. 3. Brackets 10, which project upwardly from the transverse members 7, are pivotally connected by bolts or other suitable devices 11 to brackets 12 that project upwardly from the longitudinal sills A previously described, thus connecting the intermediate frame or swinging frame to the longitudinal sills in such a manner that said intermediate frame can be tilted or swung

about an axis located some distance above the base sills of the table-supporting mechanism and extending longitudinally of the table at approximately the center thereof. The top T of the table may be of any preferred design and construction and it is mounted upon the intermediate frame or swinging frame just described in such a manner that it can move longitudinally of said frame. Roller bearings or ball bearings of any preferred design are used for supporting the movable top of the table, the table top T herein shown being supported on rollers 13 arranged between short tracks 14 and 14^a on the under side of the table top and on the top flanges of the longitudinal members 8 of the intermediate swinging frame of the table-supporting mechanism.

The means which we prefer to use for tilting the intermediate swinging frame on which the top of the table rests, consists of a shaft 15 arranged between the longitudinal sills A and provided with gears or pinions 16 that mesh with segmental-shaped racks 17 on semi-circular-shaped trusses 18 which are connected to the end transverse members 7 of the intermediate frame, as shown in Fig. 3, and means for imparting rotary movement to said shaft 15, said means consisting of a worm 19 on a manually-operated shaft 20 that meshes with a worm-gear 21 on the longitudinal shaft 15. The shaft 15 is journaled in bearings 22 that are adjustably connected by bolts 23 to braces 24 which are arranged between the longitudinal sills A, said transverse braces 24 being securely connected to the sills A by means of through bolts 25 or other suitable fastening devices that pass transversely through the braces and through the vertical webs of the sills, as shown clearly in Figs. 4 and 5. The heads of the bolts 23 which connect the shaft bearings 22 to the braces 24 fit in sockets or recesses 24^a in said braces which are of such shape that the bolts cannot turn, and the shaft bearings 22 are provided with elongated slots, as shown in Fig. 5, which permit said bearings to be adjusted vertically so as to line up the shaft 15 and cause the gears thereon to mesh properly with the rack 17 on the intermediate table-supporting frame and the worm 19 on the operating shaft 20. The operating shaft 20 is journaled in a bearing member D which is so designed that it can be reversed and thus permit the tilting mechanism to be used with either a righthand or a lefthand table top or deck. Said bearing member D preferably consists of a casting that is adapted to be clamped to one of the longitudinal sills A and which is provided with a thickened portion that projects beyond the end of the sills A so as to form a bearing for the shaft 20. Two openings 26

and 26^a are formed in the thickened portion of the bearing member D, as shown in broken lines in Fig. 3, and said openings are arranged at an angle to each other so that the shaft 20 will be inclined upwardly and thus be within easy reach of the operator who stands at the feed side of the table during the operation of adjusting same transversely. The bearing member D is preferably held in position by means of the through bolt 25 which passes through the brace block 24 at the concentrates discharge end of the table and the slot 27 in said bearing member through which said through bolt 25 passes is elongated, as shown in Fig. 1, so as to permit the bearing member D to be arranged in the proper position to give the desired tilt or inclination to the operating shaft 20. In case it is desired to use the supporting and adjusting mechanism previously described for a lefthand table top, the operator merely disconnects the shaft bearing member D, reverses it, and then arranges it in operative position on the other longitudinal sill A, as shown in Fig. 3^a, the other opening 26^a in the thickened portion of the member D serving as a bearing for the operating shaft 20.

A tilting mechanism of the construction above-described overcomes the necessity of using a locking device for holding the tilting mechanism in adjusted position because the means which tilts the intermediate frame on which the table top rests consists primarily of a worm on the operating shaft and a worm-gear on the shaft which imparts movement to the table-supporting frame, it being practically impossible for such a structure to move accidentally or become displaced because the thread of the worm extends at approximately right angles to the teeth of the worm-gear and thus securely holds same from moving in either direction. Furthermore, such a tilting mechanism enables the table to be adjusted accurately because said mechanism is so constructed that there is very little chance for lost motion to develop between the cooperating parts of same. And still another desirable feature of such a mechanism is that the force which tilts the table is applied directly to trusses on the under side of the table-supporting frame that extend across the entire transverse width of said frame and thus prevent it from springing.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:

1. In a concentrating table, a table top supporting frame, a supporting frame-work provided with standards that project above the table top supporting frame, means for suspending said frame from said standards, arc-shaped trusses arranged transversely on the under side of said frame and provided

with racks, a shaft extending longitudinally of the supporting frame-work and provided with pinions that mesh with said racks, and means under control of the operator for rotating said shaft so as to change the transverse inclination of said table top supporting frame and for locking said table at any desired position.

2. In a concentrating table, a table top supporting frame, a supporting frame-work provided with standards that project upwardly above the table top supporting frame, brackets on said frame which are pivotally connected to said standards above said frame, thus suspending the frame from said standards, arc-shaped racks connected to the under side of said frame and arranged transversely of same so as to reinforce and strengthen the frame, a shaft extending longitudinally of the supporting frame-work and provided with pinions that mesh with said racks, and an operating shaft arranged transversely of the frame and provided with a worm that meshes with a worm-gear on the shaft first-referred to.

3. In a concentrating table, a table top supporting frame, a pivot for said frame arranged at approximately the longitudinal center thereof at a point some distance above the frame, devices depending from said pivot which carry said frame, transversely arranged arc-shaped trusses on the under side of said frame which are provided on their inner edges with rack teeth, pinions cooperating with said rack teeth and adapted to be actuated by the operator for tilting said frame so as to vary the transverse inclination of the table top mounted thereon, and means for locking said table at any desired inclination.

4. In a concentrating table, a supporting frame-work comprising longitudinal sills, a table top supporting frame, uprights on said sills that project above said frame, upwardly projecting devices on said frame that are pivotally connected to the upper ends of said uprights, transversely arranged curved trusses on the under side of said frame provided on their inner edges with rack teeth, a longitudinally extending shaft journaled in bearings on said longitudinal sills and provided with pinions that mesh with said rack teeth, and an operating shaft leading to one side of said frame for rotating said shaft so as to vary the transverse inclination of said frame and for locking said shaft against rotation.

5. In a concentrating table, a supporting frame-work comprising longitudinal sills which are pivotally mounted at one end, supports projecting above said sills and arranged adjacent the free ends of said sills on opposite sides of same so as to confine the sills in position and prevent them from moving outwardly, and means suspended from

said supports for sustaining the free ends of said sills and preventing same from moving inwardly.

6. In a concentrating table provided with longitudinal sills which are pivotally mounted at one end, upwardly projecting supports adjacent the free ends of said sills which prevent the sills from moving outwardly, a bearing member resting on said supports above the sills and extending transversely of said sills, and adjustable means suspended from said bearing member and connected to said sills for supporting the free ends of same and preventing said sills from moving inwardly.

7. In a concentrating table provided with a pair of longitudinal sills which are pivotally mounted at one end, upwardly projecting stationary supports adjacent the free ends of said sills which prevent the sills from moving outwardly, a bearing member extending transversely of said sills and resting upon said supports, and a device pivotally connected to said sills and arranged between same so as to prevent movement of same inwardly and passing upwardly through said bearing member for supporting the free ends of the sills.

8. In a concentrating table provided with longitudinal sills which are pivotally mounted at one end, stationary supports adjacent the free ends of said sills and projecting above same, said supports being arranged close enough to the sills to prevent them from moving laterally, a bearing member rockably mounted on said supports and extending transversely of the sills, a bolt passing through said bearing member and provided with a nut that is arranged on the upper side of the bearing member, and means extending transversely of the sills and arranged between same for pivotally connecting said bolt to said sills.

9. In a concentrating table provided with longitudinal sills which are pivotally mounted at one end, stationary brackets arranged adjacent the free ends of the sills on opposite sides of the same and projecting above the sills, a bearing member rockably mounted on said brackets and arranged above the sills, a bolt passing through said bearing member and provided with a nut that engages the top face of the bearing member, a sleeve on the lower end of said bolt, and a fastening device for connecting said sleeve to said sills and for clamping the sills to said brackets.

10. In a concentrating table, a supporting framework comprising longitudinal sills, bracing members arranged between said sills, a table top supporting frame pivotally mounted on said sills, segmental-shaped racks on the under side of said frame arranged transversely of the frame, a shaft arranged between said sills and provided

with pinions that mesh with said racks, and adjustable bearings on the bracing members between said sills for supporting said shaft.

11. In a concentrating table, a supporting framework comprising a pair of longitudinal sills, brace blocks arranged between said sills and secured thereto, vertically adjustable shaft bearings on said blocks, a shaft arranged longitudinally between said sills and journaled in said bearings, a table top supporting frame oscillatingly mounted on said sills and provided on its under side with transversely arranged arc-shaped trusses whose upper edges have teeth, and pinions on said shaft that cooperate with the teeth on said shaft trusses for tilting said frame transversely.

12. In a concentrating table, an adjustable top supporting frame, segmental-shaped racks on said frame, a longitudinally extending shaft provided with pinions that mesh with said racks, a transversely arranged operating shaft for imparting rotary movement to said pinion, and a reversible bearing for supporting said operating shaft.

13. In a concentrating table, a supporting framework comprising longitudinal sills, a table top supporting frame pivotally mounted on said sills and provided on its under side with segmental-shaped racks, a longitudinally extending operating shaft provided with a worm that meshes with a worm-gear on said shaft, and a reversible bearing detachably connected to one of said sills for supporting said operating shaft.

14. In a concentrating table, a supporting framework comprising longitudinal sills consisting of commercially-rolled channels, upwardly projecting brackets that embrace said longitudinal sills, said longitudinal sills being pivotally connected to the brackets at the mechanism end of the table, a bearing member supported by the brackets at the concentrates discharge end of the table and arranged above the sills, means for supporting the free ends of the sills from said bearing member and for adjusting the sills vertically, uprights on said sills, a table top supporting frame suspended from said uprights, and a table top mounted on said supporting frame.

15. In a concentrating table, a supporting framework comprising longitudinal sills consisting of commercially-rolled channels, upwardly projecting brackets that embrace said longitudinal sills, said longitudinal sills being pivotally connected to the brackets at the mechanism end of the table, a bearing member supported by the brackets at the concentrates discharge end of the table, means for supporting the free ends of the sills from said bearing member and for adjusting the sills vertically, uprights on said sills, a pivotally mounted table top sup-

porting frame suspended from said up-
rights and formed from commercially-
rolled I-beams, and provided with approxi-
mately semi-circular-shaped trusses on the
5 under side thereof, and a table top mounted
on said frame.

In testimony whereof, we hereunto affix

our signatures, in the presence of two wit-
nesses, this 11th day of September, 1911.

FRANK H. BRAECKEL.

FREDERICK J. EHLERDING.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
